

Claims:

1. A method for processing a workpiece, comprising the steps of:
placing the workpiece into a workpiece support;
enclosing the workpiece support holding the workpiece within a process chamber;
5 providing a process liquid into the process chamber; and
pivoting the process chamber to remove process liquid from the process chamber.

2. The method of claim 1 where the workpiece is at least partially immersed in the
process liquid.

3. The method of claim 1 further comprising the step of rotating the workpiece
support.

4. The method of claim 1 further comprising the step of introducing a process gas or
15 vapor into the process chamber.

5. The method of claim 1 further comprising the step of enclosing the process
chamber within an outer containment chamber.

6. The method of claim 1 where the process chamber is pivoted at a controlled rate
20 to remove liquid from the process chamber.

7. The method of claim 1 further comprising the step of drawing off a surface layer of the liquid within the inner chamber via vacuum.

8. The method of claim 7 where the gas comprises nitrogen, air, argon or HF.

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9. The method of claim 1 further comprising the step of providing sonic energy to the workpiece.

10. The method of claim 5 further comprising the step of sealing the process chamber with a process chamber door.

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11. The method of claim 1 further comprising the steps of introducing a rinsing liquid into the process chamber, and then introducing a drying gas and an organic vapor into the process chamber, to facilitate removal of the rinsing liquid from the workpiece.

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12. The method of claim 3 further comprising the step of rotating the workpiece support while the workpiece support is at least partially immersed in the process liquid.

13. The method of claim 1 further comprising the step of pivoting the process chamber from a first position, where the process chamber holds the process liquid at a level at least partially immersing the workpiece held in the workpiece holder, to a second position where liquid within the process chamber drains out, through a drain opening in the process chamber.

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14. The method of claim 1 further comprising the step of spraying process liquid onto the workpiece.

15. The method of claim 1 further comprising the step of extending the workpiece support out of the process chamber, for loading and unloading workpieces, and moving the workpiece support into the process chamber, for processing workpieces.

16. The method of claim 1 wherein the process chamber has cylindrical sidewalls, further including the step of pivoting the process chamber about an axis parallel to the cylindrical sidewalls.

17. The method of claim 1 further comprising the step of holding the workpiece in an upright vertical position in the workpiece support.

18. The method of claim 1 further comprising the step of drying the workpiece by introducing a vapor of an organic solvent into the process chamber above the process liquid.

19. A method for processing a batch of wafers, comprising the steps of:
placing the batch of wafers onto a holder, with the wafers spaced apart from each other and in a generally vertical upright position;
containing the batch of wafers and the holder within a process chamber;
introducing a process liquid into the process chamber;
introducing a gas or vapor into the process chamber, above the process liquid; and

pivoting the process chamber at a controlled rate, to maintain a drain opening in the process chamber at a position where process liquid drains out of the chamber through the drain opening.

5 20. The method of claim 19 further comprising the step of spinning the wafers and the holder within the process chamber, after draining at least some of the liquid out of the process chamber.

10 21. A method for processing a workpiece, comprising the steps of:
 placing the workpiece into a workpiece support;
 enclosing the workpiece support holding the workpiece into a chamber;
 rotating the first chamber about the workpiece support; and
 providing a process fluid into the first chamber from at least one fluid supply opening on the first chamber.